Two new subspecies of *Eucalyptus tereticornis* Sm. (Myrtaceae)

A.R. Bean

Summary

Bean, A.R. (2013). Two new subspecies of *Eucalyptus tereticornis* Sm. (Myrtaceae). ***Austrobaileya* 9(1): 107–113**. Two new subspecies of *Eucalyptus tereticornis* Sm., *E. tereticornis* subsp. *rotunda* A.R.Bean and *E. tereticornis* subsp. *basaltica* A.R.Bean, are described and illustrated. A key to the four subspecies of *E. tereticornis* is provided, together with a distribution map for the new taxa.

Key Words: Myrtaceae, *Eucalyptus*, *Eucalyptus tereticornis* subsp. *basaltica*, *Eucalyptus tereticornis* subsp. *rotunda*, new subspecies, Australia flora, Queensland flora, identification key, taxonomy

A.R. Bean, Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts, Brisbane Botanic Gardens, Mt Coot-tha Road, Toowong, Queensland 4066, Australia. E-mail: Tony.Bean@science.dsitia.qld.gov.au

Introduction

Eucalyptus tereticornis Sm. is one of the best known members of the largely eastern Australian 'Red Gum' group (*E.* sect. *Exsertaria* L.D.Pryor & L.A.S.Johnson ex Brooker), characterised by the reniform cotyledons, concolorous adult leaves, ovules in 6–8 longitudinal rows, and the toothed seed coat. Brooker (2000) placed *E. tereticornis* in *E.* ser. *Erythroxylon* (Blakely) Brooker, along with 14 other species, distinguished by the patchily deciduous bark, leaves with moderately dense reticulation, erect stamens, pyramidal or obliquely pyramidal seeds and axillary inflorescences.

Eucalyptus tereticornis is a widespread and variable species; it extends from eastern Victoria to north Queensland, and to Papua New Guinea. Brooker & Slee (2000) documented a number of variants of *E. tereticornis*: *E. tereticornis* subsp. *tereticornis* (long operculum swollen at the base), the 'Hunter Valley' form (with short obese opercula, ± parallel-sided), the 'Tenterfield–Cunningham's Gap' form (operculum shorter than typical form and lacking the swollen base), *E. tereticornis* subsp. *mediana* Brooker & Slee (from eastern Victoria), and *E. blakelyi* – *E. tereticornis* intergrades.

Eucalyptus tereticornis subsp. *tereticornis* is the most widespread subspecies, extending from the south coast of New South Wales to north of Cooktown in Queensland, and Central and Oro (Northern) Districts in Papua New Guinea. In southern Queensland, it extends west to near Roma (Queensland Herbarium 2013).

Eucalyptus tereticornis subsp. *basaltica* A.R.Bean, described here, is a widespread tree on hills and ridges (predominantly basaltic) of southern Queensland and northern New South Wales. The 'Hunter Valley' form and 'Tenterfield–Cunningham's Gap' form of Brooker & Slee (2000) are both attributable to this subspecies.

An additional taxon, described here as *Eucalyptus tereticornis* subsp. *rotunda* A.R.Bean, is a riparian tree of restricted distribution from the upper reaches of the Maranoa River of southern Queensland with large orbicular juvenile leaves.

Eucalyptus tereticornis subsp. *mediana* Brooker & Slee differs from *E. tereticornis* subsp. *tereticornis* by the glaucous juvenile leaves, shorter obese operculum, mixed black single-coated and yellow double-coated seeds, and the later flowering period (Brooker & Kleinig 1999). It inhabits stream banks and river floodplains, but also low hills and plains not subject to flooding (Nicolle 2006).

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Eucalyptus tereticornis subsp. *mediana* and *E. tereticornis* subsp. *rotunda* are geographically isolated from the other subspecies, although the latter occurs in close proximity to an outlying stand of *E. tereticornis* subsp. *basaltica*. *E. tereticornis* subsp. *tereticornis* and *E. tereticornis* subsp. *basaltica* are parapatric in southern Queensland and northern New South Wales, and some hybridisation or intergradation is suspected between the two taxa.

Subspecies rank is considered appropriate for the new taxa, as there are consistent characters to separate them from *E. tereticornis* subsp. *tereticornis*.

Materials and methods

This study is based on a combination of field studies in Queensland and northern New South Wales, measurements made during an earlier seedling trial that included *Eucalyptus tereticornis* subsp. *tereticornis* and *E. tereticornis* subsp. *basaltica*, and an examination of specimens at BRI. *E. tereticornis* subsp. *mediana* has not been observed in the field, and knowledge of the taxon has been gleaned from the literature and from herbarium specimens. Measurements have been made from dried herbarium material.

Common abbreviations used in the text include Mt (Mountain), S.F. (State Forest).

Taxonomy

Eucalyptus tereticornis Sm., *Spec. Bot. New Holland*, part 4, 41 (1795). **Type:** New South Wales. Port Jackson, 1793, *J. White s.n.* (holo: LINN; iso: BM, *fide* Chippendale [1988: 324]).

Tree to 50 m high. Bark smooth throughout or with persistent grey, scaly-fibrous bark at base, forming a stocking less than one-tenth tree height; smooth bark deciduous, somewhat shiny, dappled white, grey, brown or pale blue, shedding in irregular strips less than a metre long. Adult branchlets not glaucous. Seedling leaves broadly ovate to orbicular, stems quadrangular. Juvenile leaves petiolate, alternate, broadly-lanceolate to orbicular, concolorous or slightly discolorous. Adult leaves alternate, narrow-lanceolate to lanceolate or falcate, 8–21 × 1–3.5 cm, concolorous, green, petiolate, lateral veins at 35–55° to the midrib, vein reticulation moderately dense, oil glands abundant, several per areole; intramarginal vein less than 20% of distance from margin to midrib, margins entire, base cuneate. Inflorescence with umbels borne singly in leaf axils or along leafless stems. Individual umbels 7(–9)-flowered; peduncle terete or

Key to subspecies of *Eucalyptus tereticornis*

1 Opercula of mature buds expanded at base; juvenile leaves broadly lanceolate to ovate, 2–3.2 times longer than wide . . . **E. tereticornis** subsp. **tereticornis**
1. Opercula of mature buds not expanded at base; juvenile leaves orbicular to ovate, 0.85–2 times longer than wide **2**

2 Juvenile leaves orbicular, 0.85–1.2 times longer than wide, 5–16 cm across, green, apex obtuse, apiculate or emarginate . . . . **E. tereticornis** subsp. **rotunda**
2. Juvenile leaves broadly ovate to ovate, 1.2–2.0 times longer than wide, dull bluish, apex acute **3**

3 Pedicels 1–3 mm long; opercula 1.3–1.6 times longer than broad; new growth of juvenile plants pruinose; margins of juvenile leaves usually undulate; seeds coats a mixture of black and yellow . . . **E. tereticornis** subsp. **mediana**
3. Pedicels 2.5–6 mm long; opercula 1.5–2 times longer than broad; new growth of juvenile plants dull green; margins of juvenile leaves not undulate; seed coats all black . . . . **E. tereticornis** subsp. **basaltica**

angular, 7–20 mm long. Buds with operculum scar present, stamens erect to slightly sinuate, staminodes absent, filaments white or rarely pink; opercula longer than hypanthium. Stigma blunt or slightly dilated. Ovules in six or more longitudinal rows. Fruits cupular, oblate or hemispherical, 4–7(–8) mm long, 5–8(–10) mm wide, pedicellate. Disc convex, obliquely ascending; valves 3–5, strongly exserted. Seeds pyramidal or cuboid, larger and darker than chaff, 0.8–1.5 mm long, usually black with toothed edges, but sometimes yellow and with smooth edges; hilum terminal.

Eucalyptus tereticornis subsp. **basaltica** A.R.Bean **subsp. nov.** a subspecie typica operculis quae sunt e basi non expansa, foliis juvenilibus late ovatis (late lanceolatis usque ovatis in subspecie typica) et habitatione clivorum et summorum jugorum differens. **Typus:** Queensland. Darling downs district: Near Bottle Tree Lookout, Bunya Mountains National Park, 21 May 1996, *P. Grimshaw PG2468 & L.M. Grimshaw* (holo: BRI [3 sheets]; iso: NSW).

Eucalyptus tereticornis ‘Hunter Valley form’ (Brooker & Slee 2000)

Eucalyptus tereticornis ‘Tenterfield-Cunningham’s Gap form’ (Brooker & Slee 2000)

Eucalyptus tereticornis subsp. (Bunya Mountains P.V. Holzworth AQ397993), Bostock & Holland (2010: 121).

Eucalyptus tereticornis subsp. (Consuelo Tableland M.I. Brooker B4880), Bostock & Holland (2010: 121).

Tree to 20 m high. Base of trunk sometimes with slabs of persistent grey, scaly-fibrous bark, extending up to 1 metre; bark smooth above, deciduous, somewhat shiny and dappled with white, creamy-white, yellow and brown. Juvenile leaves ovate to almost orbicular, bluish green, 6.5–12.5 × 4–7 cm, 1.2–2 times longer than broad, concolorous; apex acute, base cuneate; margins entire or crenulate, petioles 11–22 mm long. Adult leaves lanceolate to falcate, 90–160 × 12–32 mm, green; apex attenuate; petioles 11–21 mm long. Inflorescences 7-flowered or rarely 9-flowered; peduncles ± terete or obviously flattened, 7–13 mm long; pedicels 2.5–6 mm long; mature buds ovoid to ellipsoid, 9–14 × 5–6 mm; outer operculum shed early, inner operculum cylindrical-oblong to conical, 7.5–11 × 5–6 mm, 1.5–2 times longer than broad, not expanded at base, apex obtuse or acute; stamens white; outer stamens erect in bud, up to 9.5 mm long. Fruits cupular to oblate, 5–7 mm long (excluding valves), 6–8 mm wide, valves 3–5, pedicels 2–7 mm long. **Fig. 1A-E.**

***Additional selected specimens examined*: Queensland.** Port curtis district: Kroombit Tableland, *c.* 60 km SW of Gladstone, Amy’s Peak, Jun 1977, *Crisp 2824* (BRI). Burnett district: Foothills of Bunya Mountains S.F., Jul 1985, *Holzworth s.n.* (BRI [AQ397993]); Mt Mowbullan, Bunya Mountains, Jul 1994, *Fensham 1781* (BRI); Bunya Mountains, Mt Kiangarow, Dec 1954, *Smith 6261* (BRI). Wide bay district: Woowoonga S.F. 287, 2 km from Mt Goonaneman, *c.* 12 km NE of Biggenden, Apr 1989, *Last s.n.* (BRI [AQ455525]); Widgee Mt, Apr 1996, *Forster PIF19137 & Leiper* (AD, BRI, CANB, MEL, NSW). Maranoa district: 3 km W of the ‘Stock Yard’ on the Consuelo Tableland, Dec 1980, *Gunn BG227* (BRI); Consuelo Tableland, May 1982, *Neldner & Thomas 683* (BRI). Darling downs district: *c.* 6.6 miles [10.6 km] N of Yamsion on Bunya Mountains road, May 1961, *Smith 11365* (BRI); western slope of Cunningham’s Gap, Jun 1957, *Blake 20134* (BRI); *c.* 4 km along Spicer’s Gap road from the west, at S.F. gate, Oct 1995, *Brooker 12417 & Slee* (BRI, CANB, MEL, NSW); Spicer’s Gap, Jun 1963, *Everist 7285* (BRI); Allora Council Reserve, Sep 2002, *Menkins ILM0122* (BRI). Moreton district: Main Range, between Spring Bluff & Murphy’s Creek, Aug 1930, *Hubbard 3530* (BRI); near Kooralbyn Resort, Sep 1998, *Larson s.n.* (BRI [AQ662937]); Mt Cotton ridge, Oct 2008, *Bean 28106* (BRI); WNW ridge of Lost World, Jan 1989, *Weston 1368 & Richards* (BRI, NSW); Mt Cainbabel, Macpherson Range, May 1930, *White 6766* (BRI). **New South Wales.** Upper Acacia Creek, Jun 1951, *Everist 2550 & Webb* (BRI); 3.8 km along Middle Creek Road from Cressfield Road, *c.* 2 km up ridge to west, Sep 1985, *Hill 1319* (BRI, NSW); 8.6 km SW of Scone towards Merriwa, Oct 1995, *Brooker 12350 & Slee* (BRI, CANB); 8.3 km N of Wiseman’s Ferry, W edge of MacDonald River, Oct 1995, *Brooker 12340 & Slee* (BRI, CANB).

***Distribution and habitat*:** *Eucalyptus tereticornis* subsp. *basaltica* extends from north-west of Sydney to Kroombit Tops, south-west of Gladstone, and there is an outlier on the Carnarvon Range north of Mitchell (**Map 1**). It is a component of eucalypt woodland, commonly associated with *Eucalyptus eugenioides* Sieber ex Spreng., *E. melliodora* A.Cunn. ex Schauer, and *E. biturbinata*

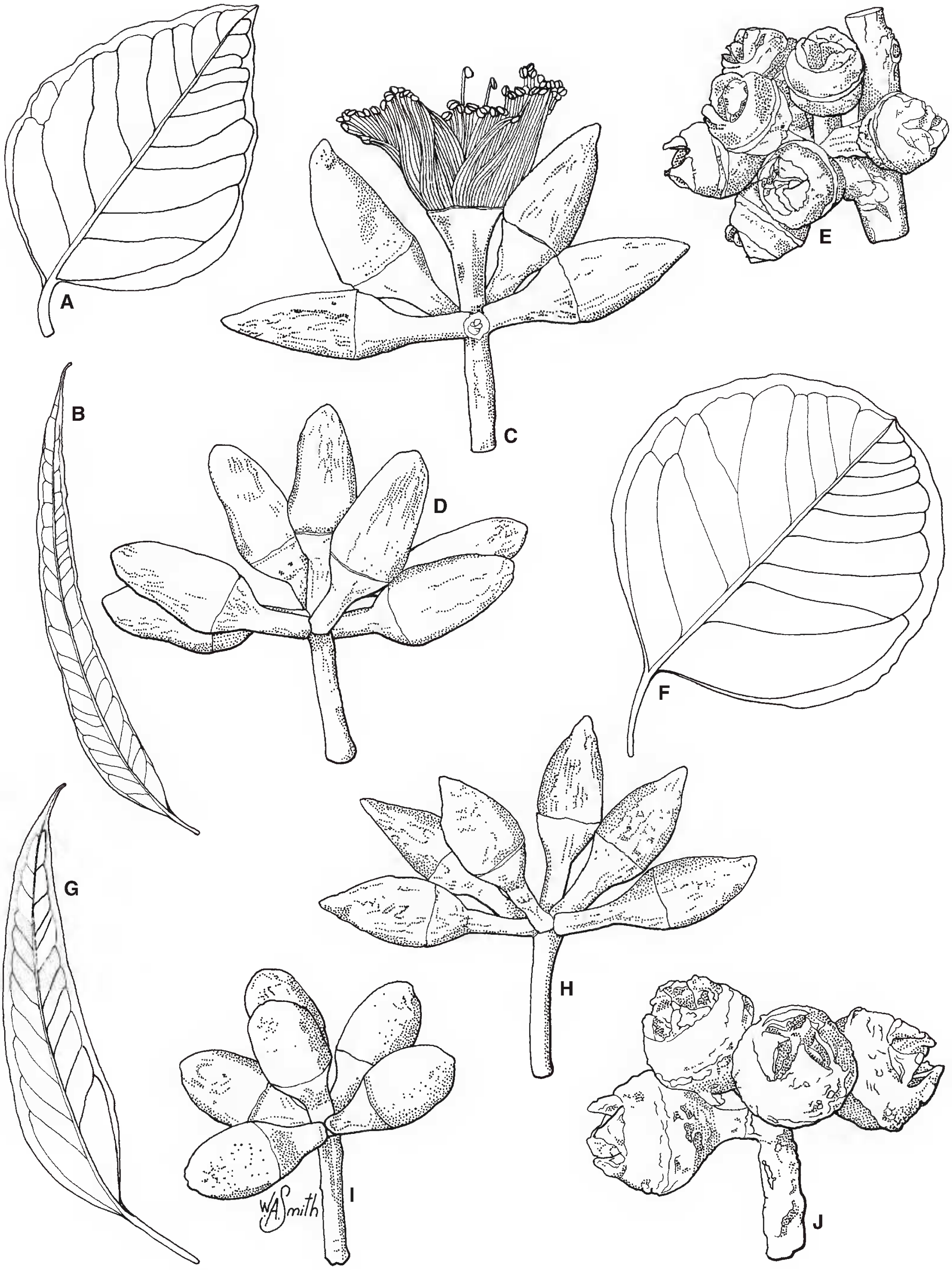

Fig. 1. ***Eucalyptus tereticornis*** subsp. ***basaltica*** A. juvenile leaf ×0.5. B. adult leaf ×0.6. C. cluster of mature buds ×2. D. cluster of mature buds ×2. E. cluster of mature fruits ×2. ***E. tereticornis*** subsp. ***rotunda*** F. juvenile leaf ×0.5. G. adult leaf ×0.6. H. cluster of mature buds ×2. I. cluster of mature buds ×2. J. cluster of mature fruits ×3. A,B,E from *Grimshaw 2468 & Grimshaw* (BRI); C from *Bean 28106* (BRI); D from *Larson s.n.* (BRI [AQ662937]); F,G,I from *Bean 31323* (BRI); H from *Bean 31321* (BRI); J from *Bean 25804* (BRI). Del. W.Smith.

L.A.S.Johnson & K.D.Hill. It most commonly grows on basalt substrates, in brown to black clayey soil, but may sometimes grow on soils derived from rhyolite or granite, and rarely, serpentinite. Altitudes vary from 100 metres to 1150 metres.

Phenology: Flowers have been collected from May to December; fruits may be found all year round.

Notes: *Eucalyptus tereticornis* subsp. *basaltica* differs from *E. tereticornis* subsp. *tereticornis* by the opercula that are not expanded at the base, the broadly ovate juvenile leaves (broadly lanceolate to ovate for *E. tereticornis* subsp. *tereticornis*), and the hillside or ridge top habitat. The buds and leaves of *E. tereticornis* subsp. *basaltica* are often smaller than those of the typical subspecies, but there is some overlap.

This subspecies was recognised as a distinct taxon by Clifford (1972), who referred to differences in the size of the buds and fruits, and the shape of the juvenile leaves.

Conservation status: A widespread and common subspecies.

Etymology: The epithet refers to the basaltic substrate upon which this subspecies usually grows.

Eucalyptus tereticornis subsp. **rotunda** A.R.Bean **subsp. nov.** a subspecie typica foliis juvenilibus orbicularibus apice obtuso emarginatove praeditis (lanceolato usque ovato apice acuto in subspecie typica) et operculis brevioribus quae sunt e basi non expansa differens. **Typus:** Queensland. Maranoa district: Western Creek, 'Mt Owen', *c.* 140 km N of Mitchell, 28 November 2006, *A.R. Bean 25804* (holo: BRI; iso: CANB, MEL, NSW, *distribuendi*).

A tree to 28 m high. Base of trunk with slabs of persistent grey, scaly-fibrous bark, extending up to 2 metres; bark smooth above, deciduous, somewhat shiny and dappled with white, creamy-white and brown. Juvenile leaves orbicular, 60–180 × 60–160 mm, 0.85–1.2 times longer than broad, concolorous or slightly discolorous, bright green; apex obtuse or emarginate, rarely apiculate, base cuneate or obtuse; margins entire or crenulate, petioles 12–32 mm long. Adult leaves lanceolate to falcate, 90–190 × 18–32 mm, concolorous, green; apex attenuate; petioles 18–30 mm long. Inflorescences 7-flowered; peduncles ± terete, 7–14 mm long; pedicels 2–3.5 mm long; mature buds ovoid to ellipsoid, 7.5–10 × 4.5–5.5 mm; outer operculum shed early, inner operculum cylindrical-oblong to conical, 6–7 × 4.5–5.5 mm, 1.3–1.7 times longer than broad, apex obtuse, acute or umbonate; stamens white; outer stamens erect in bud, though slightly sinuate, up to 5.5 mm long. Fruits cupular to oblate, 4–5 mm long (excluding valves), 5.5–7 mm wide, valves 4 or 5, pedicels 1.5–3.5 mm long. **Fig. 1F-J**.

Additional specimens examined: **Queensland**. Maranoa district: Western Creek, *c.* 12 km N of 'Mt Owen' Homestead, N of Mitchell, Nov 2011, *Bean 31321 & Halford* (BRI, CANB, MEL, NSW); *ditto loc.*, Nov 2011, *Bean 31323 & Halford* (BRI, NSW); 16.2 km from Consuelo Tableland towards Mt Moffatt, Dec 1982, *Brooker 7891* (BRI, CANB).

Distribution and habitat: *Eucalyptus tereticornis* subsp. *rotunda* is endemic to Queensland. It is known from a limited area north of Mitchell, on 'Mt Owen' Station, and in the Mt Moffatt section of Carnarvon National Park (**Map 1**). It grows along creek banks, at altitudes between 550 and 700 metres.

Phenology: Flowers have been recorded in November; fruits in November and December.

Affinities: *Eucalyptus tereticornis* subsp. *rotunda* differs from *E. tereticornis* subsp. *tereticornis* by the orbicular juvenile leaves with obtuse or emarginate apex (broadly lanceolate to ovate juveniles with acute apex for *E. tereticornis* subsp. *tereticornis*); the opercula of mature buds not expanded at base, 7.5–10 mm long with obtuse apex (opercula of mature buds expanded at base, 11–17 mm long, with acute apex for *E. tereticornis* subsp. *tereticornis*).

Eucalyptus tereticornis subsp. *rotunda* differs from *E. tereticornis* subsp. *basaltica* by the orbicular juvenile leaves with obtuse or emarginate apex (broadly ovate juveniles with acute apex for *E. tereticornis* subsp. *basaltica*), and the riverine habitat.

The juvenile leaves of *Eucalyptus tereticornis* subsp. *rotunda* are similar in size, shape and colour to those of *E. amplifolia* subsp. *amplifolia*, but *E. tereticornis* subsp. *rotunda* differs by the mature buds 7.5–10 mm long (10–12 mm for *E. amplifolia* subsp. *amplifolia*); the inflorescences 7–flowered (9–11-flowered for *E. amplifolia* subsp. *amplifolia*); the obtuse opercula (acute for *E. amplifolia* subsp. *amplifolia*) and the narrower adult leaves.

***Notes*:** *Eucalyptus tereticornis* subsp. *rotunda* is found on the upper tributaries of the Maranoa River. The type specimen of *E. camaldulensis* subsp. *acuta* Brooker & M.W.McDonald was collected at 'Forest Vale', a property between Mitchell and 'Mt Owen', also on the Maranoa River. However, *E. tereticornis* subsp. *rotunda* and *Eucalyptus. camaldulensis* subsp. *acuta* are thought to be allopatric, with occurrences of the latter starting 30–40 km downstream from occurrences of the former. *E. camaldulensis* subsp. *acuta* can be distinguished by its bluish, lanceolate juvenile leaves, the fruiting valves set at a considerable angle to the disc, and the seeds with a yellow coat.

Eucalyptus tereticornis subsp. *rotunda* is conspecific with the type of *E. populifolia* Hook., which is the basionym for *E. populnea* F.Muell., a name currently applied to the Poplar box. The typification of *E. populnea* is the subject of a current conservation proposal (Bean 2012).

***Conservation status*:** A conservation status of **Near Threatened** is proposed under Criterion D, i.e. area of occupancy less than 40 square kilometres, and fewer than 10 localities known (IUCN 2001). A minimum of 2000 trees have been observed at Mt Owen. The population size at Mt Moffatt is not known.

***Etymology*:** The subspecific epithet is from the Latin *rotundus*, meaning round. This refers to the shape of the juvenile leaves.

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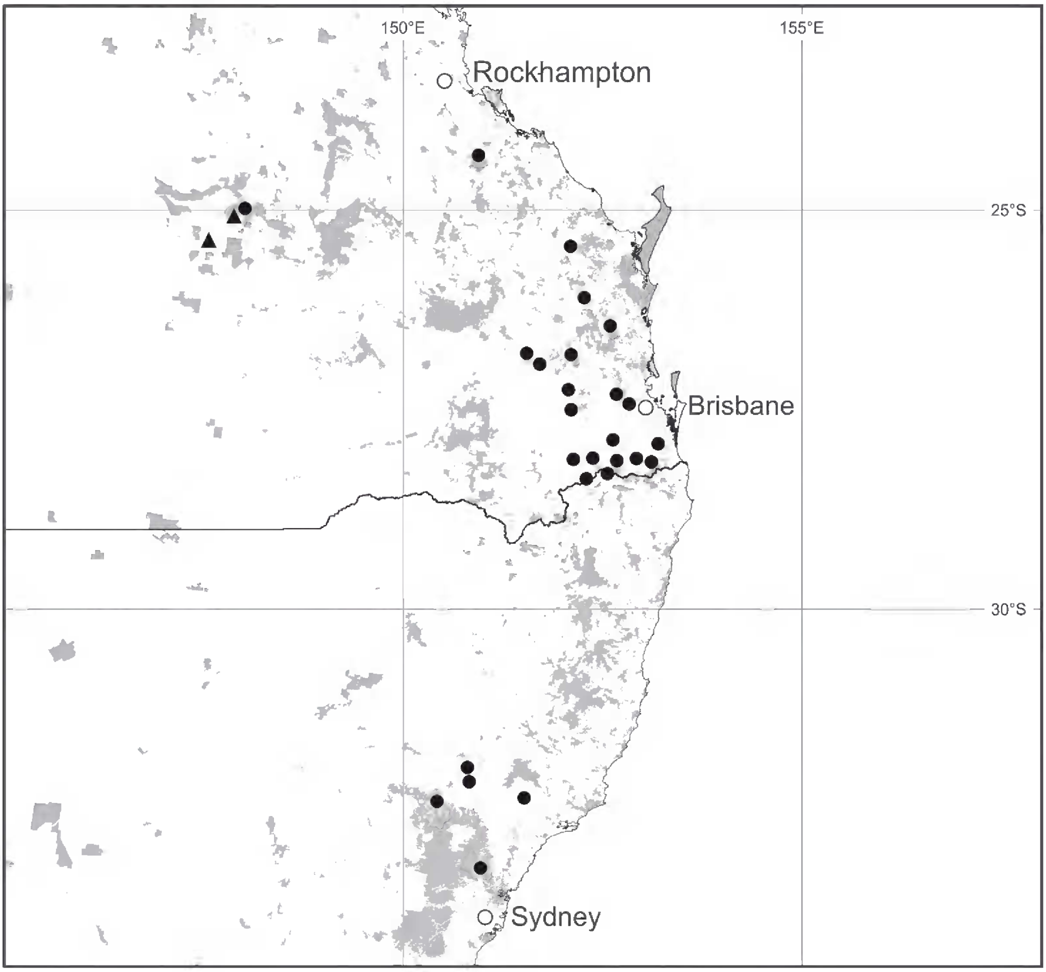

Map 1. Distribution of *Eucalyptus tereticornis* subsp. *basaltica* ● and *E. tereticornis* subsp. *rotunda* ▲.